

REMARKS

In view of the preceding amendments and the comments which follow, and pursuant to 37 C.F.R. § 1.111, amendment and reconsideration of the Office Action dated March 1, 2006, is respectfully requested by Applicant.

Summary

Claim 29, 31 and 35 have been amended.

Claim 30 is cancelled.

Claim 37 – 60 are withdrawn from consideration.

Claim 61 and 62 have been added.

Interview Summary

On February 17, 2006 the Examiner Paul D. Kim and Applicant's agent Anthony Curtis discussed, via a telephonic interview, the election of species based on the response filed on January 25, 2006. A provisional election of Species A for Claims 29 – 36 was made with traverse.

Specification

Applicants have amended the Title, as suggested by the Examiner, to the following: A METHOD OF MANUFACTURING A TUNNELING MAGNETORESISTIVE ELEMENT

Claim Objections

Claim 35 has been amended to depend on Claim 33, which provides proper antecedent basis for the features of Claim 35. Accordingly, Claim 35 has been amended to place the claim in proper dependent form.

Claim Rejections

35 U.S.C. 112, second paragraph

Claim 31 was rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 31 has been amended to recite, *inter*

alia, the insulating layers are formed by sputtering vertically to the substrate. Accordingly, Claim 31 particularly points out and distinctly claims the subject matter which applicant regards as the invention

35 U.S.C. 103

Claims 29 – 36 were rejected under 35 U.S.C. 103(a) as being unpatentable over Aoshima et al. (U.S. Patent 6,556,391; “Aoshima”) in view of Tanamoto et al. (U.S. Patent 5,877,511; “Tanamoto”). Amended Claim 29 recites, *inter alia*, insulating layers, which cover side faces of the insulating barrier layer. The arrangement of Claim 29 prevents a decrease in the output due to leakage of current from the side faces of the insulating barrier layer.

Amended Claim 29 also recites, *inter alia*, each of the underlying layers comprises a bcc-Fe film or a Fe-Co alloy film, each of the underlying layers is disposed between each side face of the free magnetic layer and each of the domain control layers, and each of the underlying layers is in direct contact with the free magnetic layer and each of the domain control layers. The structure of Claim 29 is capable of controlling the crystal orientation of the domain control layers, and thus increases coercive force and perform a magnetic coupling between each of the domain control layers and the free magnetic layer. Accordingly, a bias magnetic field can be appropriately supplied to the free magnetic layer.

Aoshima fails to teach or suggest the arrangement of Claim 29. Aoshima fails to disclose or suggest anywhere insulating layers 19A and 19B that cover the side faces of a insulating barrier layer. Aoshima only discloses insulating layers 19A and 19B on sides of a MR element 15 (Column 4, Lines 45 – 50). Aoshima also fails to teach preventing a decrease in the output due to leakage of current from the side faces of the insulating barrier layer. Accordingly, because Aoshima fails to disclose all of the features of Claim 29, the arrangement of Claim 29 would not have been obvious to one skilled in the art. Thus, Claim 29 is allowable over the cited art.

Aoshima also fails to disclose additional limitations of Claim 29. Aoshima discloses that magnetic layers 18A and 18B may be made of a hard magnetic material, and the insulating layers 19A and 19B are disposed under the layers 18A and 18B (Figures 3 and 4C; Column 4, Line 64 – Column 5, Line 5). However, Aoshima fails to disclose the underlying layers comprises a bcc-Fe film or a Fe-Co

alloy film, each of the underlying layers is disposed between each side face of the free magnetic layer and each of the domain control layers, and each of the underlying layers is in direct contact with the free magnetic layer and each of the domain control layers. Aoshima fails to disclose a bias magnetic field that can be appropriately supplied to the free magnetic layer. Accordingly, Aoshima fails to disclose all of the limitations of Claim 29, and thus Claim 29 is allowable over the cited art.

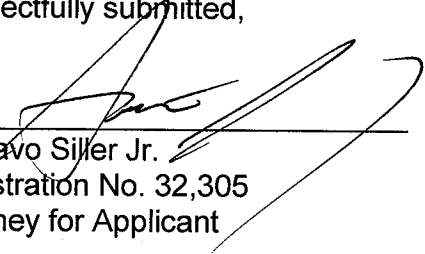
Tanamoto fails to disclose the distinguishable features of Claim 29. Accordingly, Claim 29 is allowable over the cited art.

Dependent Claims 31 – 36 and 61 – 62 depend on allowable Claim 29 and thus are allowable over the cited art for at least this reason.

Conclusion

If the Examiner is unable to allow the application in the next Office Action and believes that a telephone interview would be helpful to resolve any issues, he is respectfully requested to contact the undersigned.

Respectfully submitted,



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